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ABSTRACT

Related to the earlier ACT production system theory, this book's basic goal is to present evidence for the psychological reality of a production system model of mind. Distinguished from the original theory in three ways, this volume uses previous rational analyses to improve upon that theory and extend its scope. It also relates the theory to new data on the performance and acquisition of cognitive skills. The new theory, ACT-R, involves a neurally plausible implementation of a production system architecture. Rational analysis is used to structure and parameterize the system to yield optimal information processing. The theory is applicable to a wide variety of research disciplines, including memory, problem solving, and skill acquisition. Using intelligent tutors, much of the data are concerned with the acquisition of cognitive skills. The book provides analyses of data sets describing the extended course of the acquisition of mathematical and computer programming skills. Accompanying the book is a disk for use in conjunction with LISP 2.0 on a Mac II that will allow readers to explore the simulations described and develop new simulations in ACT-R theory. Readers have access to the code describing the theory and are able to explore variations on the theory. (Contains 325 references.) (KRN)

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